Audit Report

MILITARY AIRCRAFT ACCIDENT
INVESTIGATION AND REPORTING

Report No. D-2001-179 September 10, 2001

Office of the Inspector General
Department of Defense

Report Documentation Page

Report Date	Report Type	Dates Covered (from... to)
10Sep2001	N/A	-

Title and Subtitle Military Aircraft Accident Investigation and Reporting	**Contract Number**
	Grant Number
	Program Element Number
Author(s)	**Project Number**
	Task Number
	Work Unit Number
Performing Organization Name(s) and Address(es) OAIG-AUD (ATTN: AFTS Audit Suggestions) Inspector General, Department of Defense 400 Army Navy Drive (Room 801) Arlington, VA 22202-2884	**Performing Organization Report Number** D-2001-179
Sponsoring/Monitoring Agency Name(s) and Address(es)	**Sponsor/Monitor's Acronym(s)**
	Sponsor/Monitor's Report Number(s)

Distribution/Availability Statement
Approved for public release, distribution unlimited

Supplementary Notes

Abstract
This evaluation was initiated in response to a request from the Deputy Under Secretary of Defense (Installations and Environment), to conduct a process review of the Military Service's implementation of the DoD policy as stated in DoD Instruction 6055.7, "Mishap Investigation, Reporting, and Recordkeeping". April 10, 1989. The Deputy Under Secretary of Defense (Installations and Environment) asserted that improving aviation safety was a major objective of DoD. Military Department aviation safety programs focused on the reduction and prevention of aviation mishaps; however, aviation mishaps continued to injure people and caused property damage and losses. During FY 2000, the Services experienced a total of 57 class ilAls aircraft mishaps, which resulted in 58 deaths and 44 aircraft destroyed. A class "A" mishap occurred when the reportable damage was $1 million or more; there was total destruction of the aircraft; or an injury resulted in a fatality or permanent total disability.

Subject Terms

Report Classification unclassified	**Classification of this page** unclassified

Classification of Abstract unclassified	**Limitation of Abstract** UU
Number of Pages 27	

Additional Copies

To obtain additional copies of this evaluation report, visit the Inspector General, DoD Home Page at www.dodig.osd.mil/audit/reports or contact the Secondary Reports Distribution Unit of the Audit Followup and Technical Support Directorate at (703) 604-8937 (DSN 664-8937) or fax (703) 604-8932.

Suggestions for Future Evaluations

To suggest ideas for or to request future audits, contact the Audit Followup and Technical Support Directorate at (703) 604-8940 (DSN 664-8940) or fax (703) 604-8932. Ideas and requests can also be mailed to:

OAIG-AUD (ATTN: AFTS Evaluation Suggestions)
Inspector General, Department of Defense
400 Army Navy Drive (Room 801)
Arlington, VA 22202-4704

Defense Hotline

To report fraud, waste, or abuse, contact the Defense Hotline by calling (800) 424-9098; by sending an electronic message to Hotline@dodig.osd.mil; or by writing to the Defense Hotline, The Pentagon, Washington, DC 20301-1900. The identity of each writer and caller is fully protected.

Acronyms

AFSC	Air Force Safety Center
ASC	Army Safety Center
DoDI	Department of Defense Instruction
MISTRAC	Mishap and Hazard Recommendation Tracking
NSC	Naval Safety Center
NSIRS	Naval Safety Interactive Retrieval System
RMIS	Risk Management Information System
SAS	Safety Automation System
SIMS	Safety Information Management System

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-4704

September 10, 2001

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(FINANCIAL MANAGEMENT AND COMPTROLLER)
NAVAL INSPECTOR GENERAL
AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Evaluation Report on Military Aircraft Accident Investigation and Reporting (Report No. D-2001-179)

We are providing this evaluation report for information and use. We conducted the evaluation in response to a request by the Deputy Under Secretary of Defense (Installations and Environment). We considered management comments on a draft of this report when preparing the final report.

Comments on the draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues. Therefore, no additional comments are required.

We appreciate the courtesies extended to the audit staff. For additional information on this report, please contact Mr. William C. Gallagher at (703) 604-9270 (DSN 664-9270) (wgallagher@dodig.osd.mil) or Mr. Michael R. Herbaugh at (703) 604-9294 (DSN 664-9294) (mherbaugh@dodig.osd.mil). See Appendix C for the report distribution. The evaluation team members are listed inside the back cover.

David K. Steensma

David K. Steensma
Acting Assistant Inspector General
for Audit

Office of the Inspector General, DoD

Report No. D-2001-179 **September 10, 2001**
(Project No. D2000CB-0236.000)

Military Aircraft Accident Investigation and Reporting

Executive Summary

Introduction. This evaluation was initiated in response to a request from the Deputy Under Secretary of Defense (Installations and Environment), to conduct a process review of the Military Service's implementation of the DoD policy as stated in DoD Instruction 6055.7, "Mishap Investigation, Reporting, and Recordkeeping," April 10, 1989.

The Deputy Under Secretary of Defense (Installations and Environment) asserted that improving aviation safety was a major objective of DoD. Military Department aviation safety programs focused on the reduction and prevention of aviation mishaps; however, aviation mishaps continued to injure people and caused property damage and losses. During FY 2000, the Services experienced a total of 57 class "A" aircraft mishaps, which resulted in 58 deaths and 44 aircraft destroyed. A class "A" mishap occurred when the reportable damage was $1 million or more; there was total destruction of the aircraft; or an injury resulted in a fatality or permanent total disability.

Objectives. Our overall objective was to determine whether the Services had implemented DoD policy for aircraft mishap investigations and reporting. Specifically, we evaluated:

- the independence of mishap investigation boards,
- the root cause identification process,
- the timeliness and factual accuracy of investigation reports,
- the recordkeeping of mishaps, and
- the process for tracking corrective actions.

The evaluation was a process review and did not verify the implementation of appropriate corrective actions. We also reviewed the management control program as it applied to the evaluation objectives.

Results. The Military Departments implemented the requirements in DoD Instruction 6055.7 through their respective regulations and instructions. Each Military Department's aircraft mishap investigation board was independent and identified root causes in its mishap reports, which were timely.

The Military Departments generally implemented DoD policy for aircraft mishap investigations, reports, and recordkeeping effectively, but one issue merits management attention. Although the Army and the Air Force processes for tracking the status of open corrective actions were adequate, the Navy process was not effective. Consequently, the corrective actions data in the Navy Safety Information Management System were

unreliable. Also, the Naval Safety Center was unable to meet the strategic mission for making safety information easily accessible to all Navy personnel and to efficiently report corrective action performance.

See Appendix A for details on the management control program.

Summary of Recommendations. We recommend that the Vice Chief of Naval Operations direct the Naval Safety Center to update the safety information management system to track the timely status of corrective actions associated with aircraft mishaps and simplify system access for management and safety officials.

Management Comments. The Vice Chief of Naval Operations concurred with the recommendations and stated that the Navy recognizes the weakness in corrective-action tracking. The Navy also agreed that the recordkeeping process was not effective. The Naval Safety Center has taken or is planning to take actions to improve corrective-action tracking by increasing personnel and forwarding lists of open recommendations to appropriate agencies for action, controlling custodians, and command aircraft analysts. The Vice Chief of Naval Operations stated that two initiatives, Navy/Marine Corps Intranet and Web Enabled Navy, will establish a conduit for fully functional Internet access to Naval Safety Center databases for authorized customers and limited access to non-privileged data for all others. A discussion of the management comments is in the Finding section of the report, and the complete text is in the Management Comments section.

Table of Contents

Executive Summary i

Introduction

Background 1
Objectives 3

Finding

Aircraft Mishap Recordkeeping Process 4

Appendixes

A. Evaluation Process 10
Scope 10
Methodology 11
Management Control Program Review 11
Prior Coverage 12
B. Corrective Actions Closure Process 13
C. Army and Air Force Processes 14
D. Report Distribution 16

Management Comments

Department of the Navy 19

Background

Federal Aviation Safety Programs. The Code of Federal Regulations, Title 41, subpart 101-37.12, "Federal Agency Aviation Safety Program," July 1, 1999, recommends the elements for Federal aviation safety programs. The elements include:

- an aviation safety council,
- inspections and evaluations,
- hazard reporting,
- aircraft mishap and incident investigations,
- education and training, and
- aviation qualification and certification.

The DoD aviation safety program generally contained all of the recommended elements.

DoD Aviation Safety. Safety and the achievement of low mishap rates were integral parts of the readiness focus for FY 2000. The Under Secretary of Defense for Acquisition, Technology, and Logistics requested that, for FY 2000, the Senior Readiness Oversight Council concentrate on updating the Military Department's Aviation Safety Program.

During FY 2000, the Military Services experienced a total of 57 class "A" aircraft mishaps, which resulted in 58 deaths and 44 aircraft destroyed. A class "A" mishap occurred when the reportable damage was $1 million or more; the aircraft was destroyed; or an injury resulted in a fatality or permanent total disability.

Mishap Investigation, Reporting, and Recordkeeping. The Deputy Under Secretary of Defense (Installations and Environment) requested that the Inspector General, DoD, conduct a process review of the Service's implementation of DoD policy for aircraft accident investigation and reporting. This policy is stated in DoD Instruction (DoDI) 6055.7, "Mishap Investigation, Reporting, and Recordkeeping," April 10, 1989.

DoDI 6055.7 requires the Heads of DoD Components to:

- develop qualification criteria for mishap investigators, provide report reviews, and record collected data,
- adopt mishap categories, classification criteria, and reporting formats and procedures contained in the instruction, and
- ensure identification and corrective actions on mishap causal factors.

DoD classified mishaps according to the severity of the injury or property damage using designated letters of the alphabet. DoDI 6055.7 based the reporting format and procedures on the type of investigations performed, specifically safety and legal investigations.

Safety and Legal Investigation Processes. DoD used two distinct investigation processes for serious mishaps, safety and legal. The sole objective of DoD safety investigations was to prevent future mishaps. Safety teams conducted investigations and determined root causes to make improvements in aviation safety and prevent aviation mishaps. A key element to aviation safety was mishap reporting. Mishap reporting focused on investigation results and recommended correction of causes determined by safety investigation teams. Safety teams forwarded final reports through an endorsement chain for acceptance or rejection of recommended corrective actions. Key program managers were provided with information to implement recommended corrective actions in areas like: supervising, training, logistics, or maintenance of aviation programs. Also, Military Departments needed to consider and use historical safety data during the development and acquisition of new systems.

Legal investigations were conducted simultaneously, but separately from the safety investigations. Legal investigations focused on preserving the evidence of a mishap for all purposes other than mishap prevention. When legal investigations were completed, a publicly releasable report was produced that fully documented the facts, circumstances, and causes of a mishap. The appointed officers conducted investigations, determined findings, and made recommendations. The investigators consulted legal advisors, who were made available by the Services' judge advocate generals. Once the legal review was completed, the reports were forwarded to the commander of the mishap unit to assign responsibility and accountability.

Role of the Military Department Safety Centers. The Military Departments tasked the safety centers to:

- establish criteria for reporting and quality control of mishap data,
- develop a responsive and accessible safety database,
- analyze mishap causal factors, systemic origins, and trends, and
- incorporate procedures for developing mishap prevention programs; and track recommended corrective actions.

See Appendix B for a discussion of the corrective actions closure process. As Military Department safety chiefs, the commanders of the safety centers periodically advised their Chiefs of Staff about aviation safety matters (for example, information on the details of a mishap, or the status of corrective actions).

Objectives

Our overall objective was to determine whether the Services have implemented DoD policy for aircraft mishap investigation and reporting. Specifically, we evaluated:

- the independence of mishap investigation boards,
- the root cause identification process,
- the timeliness and factual accuracy of investigation reports,
- the recordkeeping of mishaps, and
- the process for tracking corrective actions.

The evaluation was a process review and did not verify the implementation of appropriate corrective actions. See Appendix A for details on the management control program.

Aircraft Mishap Recordkeeping Process

The Military Departments generally implemented DoD policy for aircraft mishap investigations, reports, and recordkeeping effectively, but one issue merits management attention. Although the Army and the Air Force processes for tracking the status of open corrective actions were adequate, the Navy process was not effective. The recordkeeping process was not effective because the Naval Safety Center (NSC) set a low priority for updating the status of corrective actions data in the Safety Information Management System (SIMS) and had a significant data backlog. Also, the SIMS database design required advanced systems language literacy for querying. Consequently, the status of corrective actions in SIMS was unreliable. Also, the NSC was unable to meet their strategic mission for making safety information easily accessible to all Navy personnel or to efficiently report corrective action performance.

Mishap Investigations and Reports

Military Department Guidance. The Military Department generally implemented the DoD policy for aircraft mishap investigations, reports, and recordkeeping effectively. DoDI 6055.7 requires that the Military Departments establish procedures to collect, maintain, analyze, and report aircraft mishaps. Each Military Department establishes regulations or instructions for aviation mishap/accident investigations, reports, and recordkeeping.

- Army Regulation 385-40, "Accident Reporting and Records," November 1,1994.
- Office of the Chief of Naval Operations Instruction 3750.6Q, "The Naval Aviation Safety Program," August 28,1989, establishes Navy policy. The United States Marine Corps follows the guidance provided by the Navy for implementing aviation mishap policy and procedures.
- Air Force Instruction 91-204, "Safety Investigations and Reports," November 29, 1999.

Guidance for Investigations. The Military Department guidance directs board members and a disinterested third party to conduct class "A" aircraft mishap investigations. Safety investigation boards included senior personnel from outside the mishap unit and board members with experience, training, and knowledge in related specialized fields. Safety investigation boards followed the guidance outlined by each Military Department. Legal investigations, conducted by one or more individuals, followed guidance from the offices of the judge advocate generals, legal counsel, and other authorities. Mishap board members assigned to conduct safety investigations did not conduct legal investigations of the same mishap.

The Military Departments also established structured data collection procedures for data analyses. The data analyses were used to identify causal factors associated with aircraft mishaps. Safety and legal investigators completed a thorough documentation process before identifying causal factors and recommending corrective actions (safety) or determining responsibility (legal). While reviewing 14 legal reports, we determined that the information generally matched the causes identified in the safety investigations.

Guidance for Reporting. The Services' safety investigation guidance requires an initial report 30 days after a class "A" mishap occurs, for endorsement through the chain of command. Each of the Services generally released an initial safety investigation report 30 to 90 days after the aircraft mishap. The endorsers commented on factual accuracy, recommendations, and assignments for corrective actions in the safety investigation report. According to legal guidance, the convening authority determined investigation timelines. The judge advocate generals reviewed legal reports for legal compliance and the convening authority reviewed investigation results for action.

Recordkeeping and Corrective Actions Tracking

Database Systems for Recordkeeping. The Military Departments designated the safety centers as the administrators for historical data on hazards and mishaps. The Army and Air Force database systems were available through the internet to authorized personnel worldwide, and permitted direct database querying and data entry. Database updates occurred daily to maintain information for data analyses. Information from the database systems provided timely data to management and field organizations to forecast the highest risk operations and recommend controls to reduce risk.

Tracking and Closing Corrective Action. The Military Departments used different processes for tracking and closing recommended corrective actions. The Military Departments had 591 open corrective actions for FYs 1995 through 2000 for class "A" aircraft mishaps. See Appendix B for details on the number of open corrective actions.

Army and Air Force Process

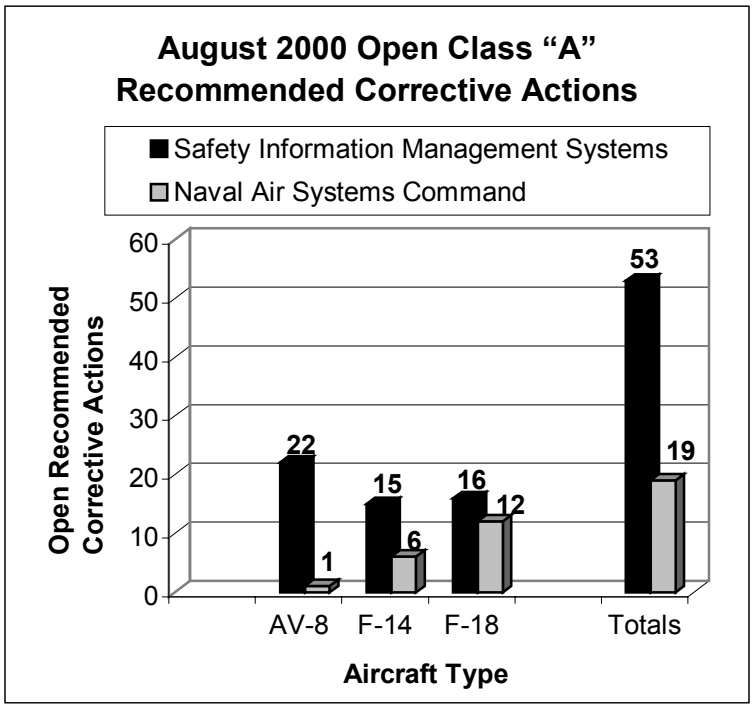
Both Army and Air Force have enhanced recordkeeping systems. The systems are web-based and offer a user-friendly query process available to commands in remote locations and both Services have provided training and on-line user aids. Army and Air Force Safety Centers maintained the tracking databases in a timely manner. The Air Force shows a higher number of unresolved corrective actions because it does not close an action until implementation is complete. Both Army and Air Force Chiefs of Staff are briefed regularly on the status of unresolved corrective actions. For details on the Army and Air Force systems, please see Appendix C.

Navy Process

Recordkeeping. The Navy process for tracking corrective actions was not effective because the NSC set a low priority for updating the status of corrective actions data in SIMS. SIMS, an informix dynamic relational database developed in 1993, was the primary database for safety information.

The NSC Database Management and Retrieval Division experienced a 70 percent reduction in data coders over the last 5 years, which caused an increased workload for the three remaining coders. As a result, the SIMS manager began prioritizing data entries. Data entry for hazard reports, safety investigation reports, and endorsement changes received a higher priority than updating the corrective actions status. At that point, data entry for changing the status of corrective actions became backlogged. NSC aircraft analysts maintained aircraft model files to track recommended corrective actions to closure. The aircraft analyst submitted data recommending record closure to the SIMS manager when the action agency completed the recommended corrective action. The SIMS manager could not determine how many open corrective actions in SIMS were implemented because data were backlogged for several months.

Corrective Actions Tracking. The NSC had significant data backlogs which caused data from SIMS to be unreliable. The NSC used the Mishap and Hazard Recommendation Tracking (MISTRAC) program to monitor corrective actions data entered in SIMS. MISTRAC data included corrective actions submissions to eliminate hazards. MISTRAC showed 339 corrective actions for class "A" aircraft mishaps in SIMS as open. Although major commands had implemented corrective actions, the data closing the case in SIMS had not been entered because of the backlog. A backlogged system has unreliable or outdated data that could result in poor decision making and inefficient resourcing by senior management. For example, we compared the SIMS data for three specific airframes assigned to the Naval Air Systems Command to the data from the Naval Air Systems Command. The Naval Air Systems Command had implemented 34 of the 53 (64 percent) open recommended corrective actions in SIMS. See the following table for a comparison of open corrective actions in SIMS and the Naval Air Systems Command. The difference demonstrates that the corrective actions implemented by the Naval Air Systems Command were not reflected as closed in SIMS.



Navy Query System. The NSC used the Naval Safety Interactive Retrieval System (NSIRS) to query data. NSIRS was a sophisticated database query system for advanced computer users. NSIRS provided an access path to SIMS and served as an interface for customers through a structured query language. Naval aircraft analysts and field organizations had not used NSIRS to query SIMS because they lacked the technical expertise for this complex system.

Accessibility of SIMS Database. Although the NSC strategic plan included a goal to find better ways to analyze database information, the NSC was unable to meet their strategic mission for making safety information easily accessible to all Navy personnel. NSC provided customers with accurate data on the status of corrective actions; however, the process required a duplication of effort by NSC aircraft analysts. Naval aircraft analysts and field organizations did not have the technical expertise to query SIMS; therefore, NSC aircraft analysts tracked the status of corrective actions on their desktop computers. When field organizations requested data from the aircraft analyst, the analyst processed the request through the SIMS manager to query the data from SIMS. The analysts compared the data from SIMS to the data on their desktop computers to ensure that customers received accurate data.

Reporting Corrective Action Performance. The NSC was unable to efficiently report corrective action performance because the status of corrective actions in the database were unreliable. The purpose of reporting corrective action performance is to measure the effectiveness of mishap prevention efforts. Effective

implementation of corrective actions was essential to preventing future mishaps that could result in loss of equipment or life. Performance measurement of corrective actions implementation would give Navy leaders and safety managers the information that highlighted implementation problems and provided the background for making informed decisions.

Conclusion

The Military Departments complied with DoD requirements for aviation mishap investigations, reports, and recordkeeping. Each Military Department flight mishap investigation was independent and identified root causes of the mishap. The aircraft mishap investigation board used the safety center analysts and technical experts in the investigation process. Investigation boards reported aviation mishap investigations in a timely manner. Each Military Department Safety Center relied on the integrity of the aircraft mishap investigation board and the endorsement chain for factual accuracy of information.

The Navy recordkeeping process did not effectively track the status of corrective actions. The NSC strategic plan included a goal to find better ways to analyze database information and a strategic mission to make safety information easily accessible to all Navy personnel. The NSC SIMS did not meet those objectives and did not efficiently report Navy corrective action performance. The NSC information system for managing aviation mishap corrective actions data needs user-friendly capability similar to the systems used by the other Military Departments and accessible through the internet. Also, by establishing a performance oversight process for implementing corrective actions, Navy leaders and safety managers would have the tools needed to make informed resourcing and personnel decisions that could effect significant reductions in accidents.

Recommendations and Management Comments

We recommend that the Vice Chief of Naval Operations direct the Naval Safety Center to update the safety information management system to:

1. **Track the timely status of corrective actions associated with aircraft mishaps.**

Management Comments. The Vice Chief of Naval Operations concurred and stated that they recognize the weakness in corrective-action tracking and agreed that the recordkeeping process was not effective because of priorities and staffing. However, the Vice Chief of Naval Operations stated that the process of retrieving information from the action agencies is in need of attention and not the SIMS database. The Naval Safety Center is either taking or planning to take the following actions.

- Hire a GS-12 civilian to oversee the tracking of corrective actions listed in mishap recommendations and hazard reports.

- Assign two Naval Safety Center Reservists to contact all action agencies and update the status of all open mishap recommendations. This research will significantly reduce the number of open recommendations.

- Send a list of open recommendations, twice a year, to all action agencies asking that they respond within 30 days indicating whether the recommendation has been completed or provide an update to its status.

- Send a similar list, twice a year, to all controlling custodians.

- Send a list of open recommendations, monthly, to the command's aircraft analysts to give them the information necessary to take a more proactive approach with outside agencies.

2. Simplify system access for management and safety officials.

Management Comments. The Vice Chief of Naval Operations concurred and stated that the SIMS database is the most extensive safety database in the DoD. Although the database appears complex and unwieldy, SIMS permits NSC analysts to conduct detailed mishap analysis and research vital information, striving to save lives and resources. The NSC purposely restricted direct access to the database to protect the privileged nature of much of the data and to ensure that untrained personnel do not misinterpret data.

The Vice Chief of Naval Operations stated that two initiatives, Navy/Marine Corps Intranet and Web Enabled Navy, will establish a conduit for fully functional Internet access to NSC databases for authorized customers and limited access to non-privileged data for all others.

Appendix A. Evaluation Process

Scope

We reviewed the Military Services' policies and procedures that implement DoD policy for aircraft mishap investigation and reporting. We also reviewed the role of the Military Department Safety Centers, selected major commands, and field operating units for aircraft mishap investigations, reports, recordkeeping, and process for tracking corrective actions. We judgmentally selected 101 safety and legal mishap investigation reports for class "A" aircraft mishaps from FY 1995 through FY 2000.

DoD published the revision to DoDI 6055.7, "Accident Investigation, Reporting, and Recordkeeping," October 3, 2000, after our evaluation project began. Aviation mishap investigation requirements generally remained the same; therefore, implementation of the new instruction was not included in the evaluation.

DoD-Wide Corporate-Level Government Performance and Results Act Coverage. In response to the Government Performance and Results Act, the Secretary of Defense annually establishes DoD-wide corporate-level goals, subordinate performance goals, and performance measures. This report pertains to achievement of the following corporate-level goal, subordinate performance goal, and performance measure.

> **FY 2001 DoD Corporate-Level Goal 2:** Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. Transform the force by exploiting the Revolution in Military Affairs, and reengineer the Department to achieve a 21st century infrastructure. **(01-DoD-02)**
> **FY 2001 Subordinate Performance Goal 2.5:** Improve DoD financial and information management. **(01-DoD-2.5)**
> **FY 2001 Performance Measure 2.5.3:** Qualitative assessment of reforming information technology management. **(01–DoD-2.5.3.)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following functional area objectives and goals.

- **Environment Area. Objective:** Protect human resources with the annual goal of achieving significant reductions in all accidents and occupational injuries and illnesses. **Goal:** Apply risk management techniques to aviation safety, ground safety, traffic safety, and safety and occupational health. **(Env-5.1.1)**

- **Information Technology Management Area. Objective:** Provide services that satisfy customer information needs. **Goal:** Modernize and integrate the Defense Information infrastructure, evolving it to the Global Information Grid. **(IM-2.3)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in the DoD. This report provides coverage of the Defense information technology high-risk area.

Methodology

To accomplish the evaluation, we identified, gathered, and analyzed existing requirements, policy, and guidance related to DoD aircraft mishap investigations and reports by:

- conducting site visits to the Military Department Safety Centers to review the investigation and reporting process,
- conducting site visits to selected major commands to review the process for tracking corrective actions,
- interviewing personnel at selected wings and squadrons to obtain their views on the effectiveness of the aviation safety program,
- reviewing safety and legal reports for class "A" aircraft mishaps to verify implementation of DoD policy and to compare causal factors, and
- interviewing officials from other agencies to determine their methods for aircraft mishap investigation and reporting.

Use of Computer-Processed Data. To achieve the evaluation objectives, we relied on computer-processed data contained in the Army, Navy, and Air Force safety information systems. Nothing came to our attention as a result of specified procedures that caused us to doubt the reliability of the data contained in the Army and Air Force safety information systems. The results of our data tests of the Naval Safety Information Management System (SIMS) showed that there were open recommendations in SIMS that had, in fact, been closed, casting doubt on the data's reliability. However, when the data are reviewed in context with other available evidence, we believe that the opinions, conclusions, and recommendations in this report are valid.

Evaluation Type, Dates, and Standards. We performed this program evaluation from August 2000 through April 2001 in accordance with standards implemented by the Inspector General, DoD. Accordingly, we included tests of management controls considered necessary.

Contacts During the Evaluation. We visited or contacted individuals and organizations within DoD and other Federal agencies. Further details are available on request.

Management Control Program Review

DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, and DoD Instruction 5010.40, "Management Control (MC) Program Procedures," August 28, 1996, require DoD organizations to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of Review of the Management Control Program. We reviewed the adequacy of NSC management controls over the implementation of the DoD policy for aircraft mishap investigation and reporting. Specifically, we reviewed NSC management controls over investigations, reports, recordkeeping, and the process for tracking corrective actions. We assessed management's self-evaluation.

Adequacy of Management Controls. We identified material management control weaknesses for NSC as defined by DoD Instruction 5010.40. NSC management controls for implementing the DoD aviation mishap investigations, reports and recordkeeping program were adequate; however, the Navy process for tracking corrective actions was not effective. The NSC set a low priority for updating the status of corrective actions data in SIMS. Implementation of Recommendations 1. and 2. will improve NSC's corrective action tracking process. A copy of the report will be provided to the senior official responsible for management controls at the Naval Safety Center.

Adequacy of Management's Self-Evaluation. The NSC did not identify tracking corrective actions as an assessable unit and, therefore, did not identify or report the material management control weaknesses identified by the evaluation. However, NSC plans to revisit, in their 2001 Strategic Plan, the tracking of aviation mishap corrective actions and will address it within Goal 3, Objective 1 of their 2001 Strategic Plan, "…Evaluate Process/Product Effectiveness" and treat tracking of aviation mishap corrective actions as a separate assessable unit.

Prior Coverage

During the last 5 years, the General Accounting Office issued two reports addressing aircraft safety.

GAO Report No. NSIAD-98-95BR, "Military Aircraft Safety, Serious Accidents Remain at Historically Low Levels," March 23, 1998.

GAO Report No. NSIAD-96-69BR, "Military Aircraft Safety, Significant Improvements Since 1975," February 1, 1996.

Appendix B. Corrective Actions Closure Process

Different Processes for Closure. The Military Departments had different processes for closing recommended corrective actions. The Army Safety Center closed a corrective action when the major command accepted responsibility for implementation. This process did not reflect whether the corrective action was fully implemented. The Naval Safety Center closed a corrective action after the NSC analyst notified the SIMS manager that the corrective action was implemented; however, there was a significant backlog, and the corrective action data in SIMS were unreliable. The Air Force Safety Center updated the database and kept all corrective actions open in the tracking system until fully implemented. The following table demonstrates that the number of noncumulative open corrective actions in the Military Department's databases varied dramatically because of the different processes.

Open Corrective Actions For Class "A" Aircraft Mishaps FYs 1981 through 2000

Fiscal Year	Army	Navy	Air Force	Total
2000	4	143	66	213
1999	0	82	87	169
1998	0	60	41	101
1997	0	26	28	54
1996	0	5	12	17
1995	0	23	14	37
Total	**4**	**339**	**248**	**591**
1994 – 1981	0	0	21	21
Total	**4**	**339**	**269**	**612**

Implementation of Corrective Actions. The DoDI 6055.7 requires that the Heads of DoD Components establish procedures to verify that corrective actions are taken on identified mishap causal factors. The table shows that 612 corrective actions, recommended by safety investigations for class "A" aircraft mishaps, were reflected as not implemented in the Military Department tracking databases. Corrective action recommendations were made to correct a causal factor of a class "A" aircraft mishap and to prevent future mishaps. Corrective actions were delayed or not implemented for various reasons, such as: insufficient funds, limited personnel, professional or philosophical disagreement with the recommended corrective action, not cost beneficial, long logistical lead times, and economic decisions for modifying equipment which was nearing the end of its useful life.

Appendix C. Army and Air Force Processes

Army Process

Recordkeeping. The Army Safety Center (ASC) converted the Army Safety Management Information System database to a new Oracle database approximately 3 years ago. The ASC made the Risk Management Information System (RMIS) available, through the internet, to safety officers (of all Services) worldwide. RMIS was the primary interface to safety data stored in the Army Safety Management Information System. The ASC provided Discoverer software that allowed major commands to query technical information from remote locations. In addition, the ASC also offered training and data dictionaries to major command safety engineers to assist in constructing data queries.

Corrective Actions Tracking. The Army tracking system indicated four open corrective actions for class "A" aircraft mishaps. The Army used the Recommendation Tracking System, which was a data tracking program in RMIS. When a major command accepted responsibility for implementing a recommended corrective action, the ASC changed the status in the Recommendation Tracking System to closed. At that point, the major command was tasked to assign the corrective action to the appropriate organization, monitor and track the progress, and provide the status to the ASC. The ASC Director of Operations, conducted monthly meetings to track the progress of open corrective actions. The ASC provided quarterly briefings to the Army Chief of Staff. The quarterly briefings discussed major command assignments and comments from the commands. The Army Chief of Staff or Vice Chief of Staff resolved all assignment disputes among the ASC and the major commands.

Air Force Process

Recordkeeping. The Air Force Safety Center (AFSC) updated and enhanced their aircraft mishap databases and reporting processes in FY 1998. The AFSC used the Safety Automation System (SAS), a globally accessible web-based network, to report and analyze mishaps. SAS provided secure, easy, and worldwide access of Air Force ground safety data to safety officers of all Services. SAS also provided ad-hoc query capability to mishap reports with simple data entry forms and various query output reports. The AFSC offered training and published user's guides to assist in constructing database queries. The AFSC continued to enhance the mishap databases by developing the aviation SAS. Aviation SAS will allow users in the field to query aviation safety information from remote locations. The AFSC anticipates that aviation SAS will go online by December 2001.

Corrective Actions Tracking. The Air Force had 248 open corrective actions for class "A" aircraft mishaps; however, corrective actions remained open in the Air Force tracking system until the recommendation was fully implemented. The AFSC tasked the appropriate major command to verify that the corrective actions were implemented in the final mishap report. The major command's formal corrective action review process provided minutes to the AFSC on the status of corrective actions semiannually. When the major command confirmed that corrective actions were completed, the AFSC changed the status to closed. Not only did the AFSC brief the Air Force Chief of Staff, but safety issues were discussed at meetings of all senior Air Force leadership, including selected Corona meetings. The Corona, hosted by the Air Force Chief of Staff, met three times a year to address issues, share information, and formulate policy.

Appendix D. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition, Technology, and Logistics
    Deputy Under Secretary of Defense (Installations and Environment)
Under Secretary of Defense (Comptroller/Chief Financial Officer)
    Deputy Chief Financial Officer
    Deputy Comptroller (Program/Budget)

Department of the Army

Assistant Secretary of the Army (Financial Management and Comptroller)
Auditor General, Department of the Army
Commander, Army Safety Center

Department of the Navy

Vice Chief of Naval Operations
Naval Inspector General
Auditor General, Department of the Navy
Commander, Naval Safety Center

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force
Commander, Air Force Safety Center

Non-Defense Federal Organization

Office of Management and Budget

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Efficiency, Financial Management, and Intergovernmental Relations, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform
House Subcommittee on Technology and Procurement Policy, Committee on Government Reform

Department of Navy Comments

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, D.C. 20350-2000

IN REPLY REFER TO
3 August 2001

From: Vice Chief of Naval Operations
To: Department of Defense, Inspector General

Subj: RESPONSE TO DRAFT EVALUATION REPORT

Ref: (a) Draft of proposed DoD IG Evaluation Report, Project No. D2000CB-0236.000 of 11 May 2001
(b) DoD Directive 7650.3

1. In response to reference (a), the following comments are provided per reference (b).

a. Recommendation. "We recommend that the VCNO direct the NSC to update the Safety Information Management System (SIMS) to: (1) Track the timely status of corrective actions associated with aircraft mishaps, and (2) Simplify system access for management and safety officials."

b. Discussion.

(1) Recommendation 1. Concur. The Naval Safety Center recognizes the weakness in corrective-action tracking and agrees that the recordkeeping process was not effective because of priorities and staffing. However, it is the process of retrieving information from the action agencies and not the SIMS database that is in need of attention. The Naval Safety Center is either taking or planning the following actions:

(a) Hiring a GS-12 civilian to oversee the tracking of corrective actions listed in mishap recommendations and hazard reports.

(b) Assigned two Naval Safety Center Reservists to contact all action agencies and update the status of all open mishap recommendations. This research will significantly reduce the number of open recommendations.

(c) Twice per year, Commander, Naval Safety Center will send a list of open recommendations to all action agencies asking that they respond within 30 days indicating the recommendation has been completed or provide an update to its status. These reports will be forwarded on 1 March and 1 September.

(d) Additionally, on 1 June and 1 December Commander Naval Safety Center will send a similar list to all controlling custodians.

Subj: RESPONSE TO DRAFT EVALUATION REPORT

(e) Once a month, the Safety Center's data retrieval division will send a list of open recommendations to the command's aircraft analysts. This process improvement gives analysts the information necessary to take a more proactive approach with outside agencies.

The analysts currently make every effort to close recommendations when they write Class "A" final endorsements. Those that remain open usually require extensive engineering research, funding, and procurement and installation planning. Keeping these recommendations "open" until confirmation is received ensures that no corrective action is prematurely closed.

(2) Recommendation 2. Concur. The SIMS database is the most extensive safety database in the Department of Defense. While the vast amount of data it includes may make the database appear complex and unwieldy, SIMS lets Naval Safety Center analysts conduct detailed mishap analysis and research--vital information when striving to save lives and resources. Direct access to the database is purposely restricted for two reasons: to protect the privileged nature of much of the data and to ensure that untrained personnel don't misinterpret data.

Providing careful analysis and useful information about mishap causal factors has been, and will continue to be, one of the most important functions of the Naval Safety Center. The Navy/Marine Corps Intranet (NMCI) and Web Enabled Navy (WEN) initiatives will establish a conduit for fully functional Internet access to NSC databases for authorized customers and limited access to non-privileged data for all others.

2. As always, I appreciate your efforts in helping identify ways in which we can improve the safety posture of the Navy. I am confident the Naval Safety Center is on the right track with regard to the above recommendations. If you have further questions or recommendations, please feel free to contact Commander, Naval Safety Center directly.

WILLIAM J. FALLON
Admiral, U.S. Navy
Vice Chief of Naval Operations

Evaluation Team Members

The Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD prepared this report. Personnel of the Office of the Inspector General, DoD, who contributed to the report are listed below.

Richard B. Jolliffe
William C. Gallagher
Michael R. Herbaugh
Marcia L. Kilby
Robert M. Sacks
Joseph M. Kaseler
Scott G. Stadtmueller